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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,495	07/25/2001	Barbara F. Barenburg	211810US99	4424

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OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT PC  
FOURTH FLOOR  
1755 JEFFERSON DAVIS HIGHWAY  
ARLINGTON, VA 22202

EXAMINER

GEYER, SCOTT B

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/911,495

Applicant(s)

BARENBURG ET AL.

Examiner

Scott Geyer

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 06 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 25 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings as submitted on 25 July 2001 are acceptable.

### ***Specification***

2. The specification as submitted is acceptable.

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware of in the specification.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear to the examiner, upon examination of the specification, what the applicant means by "arrayed wavelength grating". Specifically noted are page 40, lines 15-16, page 41, lines 12 et seq., continued through to page 43, line 19. From the disclosure, the examiner interprets the term "arrayed wavelength grating device", also referred to as "arrayed waveguide grating device", to be any generic optical component capable of receiving an optical signal. Furthermore, a prior search of the art for the term "arrayed wavelength grating device" revealed US Patent 6,339,664 (Farjady et al.) and

"Arrayed-Waveguide Grating For Wavelength Division Multi/Demultiplexer With Nanometer Resolution" (Takahashi et al.). Both references recite an "arrayed wavelength grating device" as a device which receives multiple wavelengths of light and separates the light based upon wavelength. Therefore, as stated above, the examiner will interpret the term "arrayed wavelength grating device" to be any generic device which is capable of receiving an optical signal.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramesh (5,248,564) in view of Ramdani et al. (5,741,724).

As to claim 1, Ramesh teaches a silicon substrate (figure 3, numeral 10). A series of layers are stacked upon the substrate as follows: an amorphous oxide material (12), a perovskite oxide material (20), a compound semiconductor material (22) and (24) and an array of capacitor dots (28).

Ramesh does not teach an optical device layer on top of the compound semiconductor material.

However, Ramdani et al. does teach a layered semiconductor device (see figure 2) wherein the top layer (22) is an optical waveguide structure (column 2, lines 37-38).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the device of Ramesh with an optical device as taught by Ramdani et al. so as to provide a means for the device to receive and/or transmit optical signals.

As to claims 2-8, which includes the language on page 45, lines 14, 17, 20, 23, 26, 29-30 and page 46, lines 3-4, applicant should note that this is merely "intended use" language which cannot be relied upon to define over Ramesh and Ramdani et al., since Ramesh and Ramdani et al. disclose all of the claimed elements and their recited relationships. For example, claim language such as "functions as a multiplexer", "functions as a demultiplexer", functions as a router" and "functions as a switch" is "intended use" language.

Moreover, the examiner will presume that the recited intended use is inherent in Ramesh and Ramdani et al. since all of the claimed elements and the relationships therebetween are met by Ramesh and Ramdani et al.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-8 and 13-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 15 of co-pending Application No. 09/882,064 (Gamota) in view of Ramdani et al. (5,741,724).

9. As to applicant's claim 1, claim 1 of application 09/882,064 (Gamota) recites a monocrystalline silicon substrate, an amorphous oxide material overlying the monocrystalline silicon substrate, a monocrystalline perovskite oxide material overlying the amorphous oxide material and a monocrystalline compound semiconductor material overlying the monocrystalline perovskite material (page 52, lines 8-15).

Gamota does not recite an optical device layer ("arrayed wavelength grating device").

However, Ramdani et al. teach a top device layer (see figure 2, numeral 22) which is an optical waveguide structure (column 2, lines 49-50).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the device of Gamota with an optical device layer as taught by Ramdani et al. so as to provide a means for the device to be in optical communication with another device.

As to claims 2-8, which includes the language on page 45, lines 14, 17, 20, 23, 26, 29-30 and page 46, lines 3-4 applicant should note that this is merely "intended use" language which cannot be relied upon to define over Gamota in view of Ramdani et al.,

since Gamota in view of Ramdani et al. discloses all of the claimed elements and their recited relationships.

For example, claim language such as "functions as a multiplexer", "functions as a demultiplexer", functions as a router" and "functions as a switch" is "intended use" language.

Moreover, the examiner will presume that the recited intended use is inherent in Gamota in view of Ramdani et al. since all of the claimed elements and the relationships therebetween are met by Gamota in view of Ramdani et al.

/

**10.** As to applicant's claim 13, claim 15 of application 09/882,064 (Gamota) recites a method of providing a monocrystalline silicon substrate, depositing a monocrystalline perovskite structure on the substrate, forming an amorphous oxide interface between the perovskite layer and the substrate, forming a monocrystalline compound semiconductor layer over the perovskite layer (page 55, lines 5-18).

Gamota does not recite an optical device layer ("arrayed wavelength grating device").

However, Ramdani et al. teach a top device layer (see figure 2, numeral 22) which is an optical waveguide structure (column 2, lines 49-50).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Gamota with an optical device layer as taught by Ramdani et al. so as to provide a means for the device to be in optical communication with another device.

As to claims 14-20, which includes the language on page 48, lines 16, 19, 22, 25, 28, 31-32 and page 49, lines 3-4, applicant should note that this is merely "intended use" language which cannot be relied upon to define over Gamota in view of Ramdani et al., since Gamota in view of Ramdani et al. discloses all of the claimed elements and their recited relationships.

For example, claim language such as "functions as a multiplexer", "functions as a demultiplexer", functions as a router" and "functions as a switch" is "intended use" language.

Moreover, the examiner will presume that the recited intended use is inherent in Gamota in view of Ramdani et al. since all of the claimed elements and the relationships therebetween are met by Gamota in view of Ramdani et al.

11. This is a provisional obviousness-type double patenting rejection.

***Allowable Subject Matter***

12. Claims 9 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and also clarified to overcome the rejections based on 35 USC 112 noted above.

The following is a statement of reasons for the indication of allowable subject matter:

Neither Ramesh (5,248,564), Ramdani et al. (5,741,724) nor Gamota (US application 09/882,064) disclose an "arrayed wavelength grating device".



Farjady et al. (6,339,664) and Takahashi et al. (and "Arrayed-Waveguide Grating For Wavelength Division Multi/Demultiplexer With Nanometer Resolution") teach an arrayed wavelength grating device. Farjady et al. teach arrayed waveguide grating (AWG) as being manufactured from doped silica films deposited onto silicon substrates (column 1, lines 28-30). Takahashi et al. teach an arrayed-waveguide grating device (figure 1) which separates an optical signal based on wavelength. However, neither Gamota nor Takahashi et al. teach a plurality of electro-optical waveguides formed with the monocrystalline compound semiconductor layer and a first electrode formed in the monocrystalline compound semiconductor layer and above the plurality of electro-optical waveguides, as in applicant's claims 9 and 21.

Also, claims 10-12 and claims 22-24, which depend from claims 9 and 21, respectively, are thus also allowable.

### ***Conclusion***

**13.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Geyer whose telephone number is (703) 306-5866. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. The examiner may also be reached via email: **scott.geyer@uspto.gov**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (703) 308-1680. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

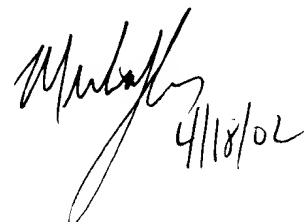
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sbg  
April 16, 2002

A handwritten signature in cursive script, followed by the date "4/18/02" written in a similar style.

MICHAEL SHERRY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800